Massachusetts Institute of Technology
Instrumentation Laboratory
Cambridge, Massachusetts

LUMINARY Memo #109

To: Distribution

From: B. McCoy

Date: 9 September 1969

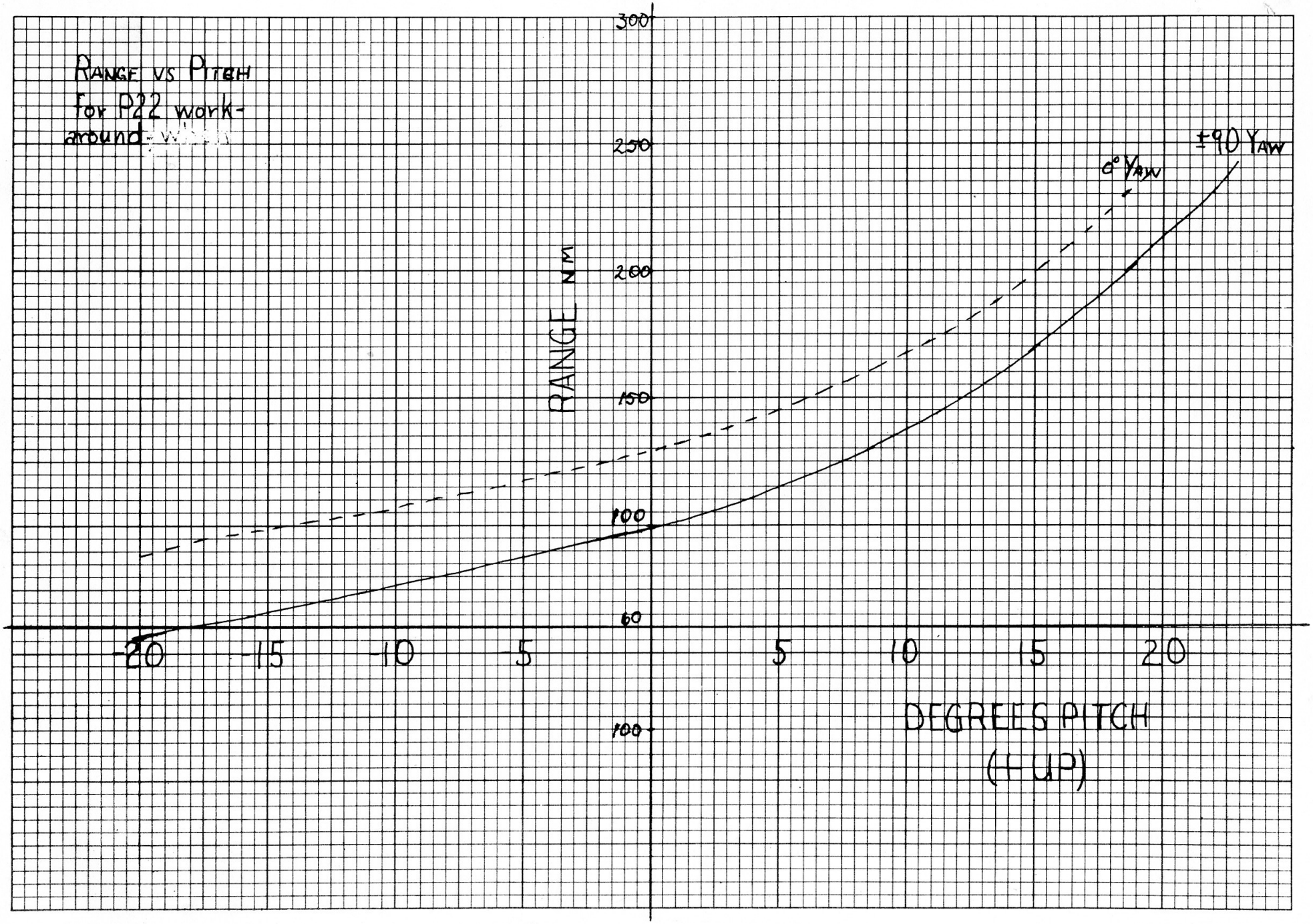
Subject: Workaround for P22 Bug

The bug is described in anomaly report L-1B-01; the pre-designate routine (allows the astronaut to call P22 before the CSM is in the RR Mode II limits) will not work. The procedure described below will give to the astronaut the cue when the CSM is in the RR Mode II limits.

On the attached graph is a curve that gives the range vs. the CDU Y at which the CSM is in the Mode II limits. It assumes a worse case of $\pm 90^{o}$ yaw (CDU X = $\pm$90). The idea is to V83 to observe the range as the CSM approaches the landing site. Knowing the number of degrees the LM is pitched at touchdown (P57) the astronaut can tell at what range the CSM will be in the Mode II limits. When R1 of N54 equals that amount, the crewman selects P22. It should be emphasized that the CSM is in the Mode II limits for only about 3 minutes; so in order to save a little time the crewman could use the following, assuming the proper CB and switch configuration:

Key V95E
Key V37E 22E
F V04N12 - Key V83E
F V16N54 - R1=XXX, PRO
F V04N12 - PRO

By assuming a 90^{o} yaw angle, a safety factor of about 30 n. mi. is gained.


RANGE VS PITCH
FOR P22 WORK-
AROUND
300
250
200
150
100
60
100
RANGE NM
±90 YAW
0° YAW
-20
-15
-10
-5
5
10
15
20
DEGREES PITCH
(+ UP)